CIRCLE THEOREMS – PRACTICE QUESTIONS

1. The line AC is a diameter of the circle.

Find the size of angle ABC.

2. O is the centre of the circle.
   Angle DEF = 54°.

Find the size of angle DOF.

3. O is the centre of a circle.
   The line XYZ is a tangent to the circle.

Find the size of the angle OYZ.
4. IJKL is a cyclic quadrilateral.

(a) Find the size of angle IJK.

(b) Find the size of angle JKL.

5. AMB and CMD are triangles.
   Angle ABM = 39°.
   Angle DCM = 42°.

(a) Find the size of angle MDC.

(b) Find the size of angle BAM.

6. O is the centre of the circle.
   Two tangents to the circle touch the circumference at points M and N.
   T is the point where the two tangents meet.
   Angle OTM = 51°.

   Find the size of angle NTO.
7.
The line DCE is a tangent to the circle.
Angle BCE = 61°.
Angle DCA = 68°.

(a) Find the size of angle CAB.

(b) Find the size of angle ABC.

(c) Find the size of angle ACB.

8.
O is the centre of the circle.

(a) Find the size of angle FGH.

(b) Given that FG = GH, find the size of angle GFH.
9. ILM and JKM are triangles.
   Angle MJK = 33°.
   Angle MLI = 47°.

(a) Find the size of angle LIM.

(b) Find the size of angle MKJ.

(c) Find the size of angle IML.

10. PQRS is a cyclic quadrilateral.
    Angle PQR = 78°.
    Angle SRQ = 93°.

(a) Find the size of angle SPQ.

(b) Find the size of angle RSP.
11. The line XWV is a tangent to the circle.

(a) Find the size of angle XWT.

(b) Find the size of angle UWV.

12. O is the centre of the circle.
Two tangents to the circle touch the circumference at points A and C.
B is the point where the two tangents meet.
Angle OBC = 44°.

(a) Find the size of angle ABO.

(b) Find the size of angle OCB.

(c) Find the size of angle COB.
13. 
O is the centre of the circle. 
Angle FOE = 118°.

(a) Find the size of angle FDE.

(b) Find the size of angle OEF.

14. 
GHO and JIO are triangles. 
Angle OGH = 21°. 
Angle OIJ = 42°. 
Angle JGO = 33°.

Find the size of angle GJO.
15. KLMN is a cyclic quadrilateral. 
   O is the centre of the circle. 
   Angle KNM = 124°.

Find the size of angle KOM.

16. ZXY is a tangent to the circle.
   VW = VX.
   Angle VWX = 47°.

Find the size of angle WXY.
17.
O is the centre of the circle.
Two tangents to the circle touch the circumference at points A and B.
T is the point where the two tangents meet.
Angle $AOT = 70^\circ$.

\[ A \quad O \quad T \quad B \]

Find the size of angle $ABT$.

18.
M is the centre of a circle.
EFG is a tangent to the circle.
Angle $CDF = 51^\circ$.

\[ C \quad M \quad D \]

Find the size of angle $DFG$. 

\[ E \quad F \quad G \]
19. IJKL is a cyclic quadrilateral. Angle IML = 116° and Angle JKL = 88°. IM = JM. Find the size of angle JKI.

20. The line PQ is a tangent to the circle. O is the centre of the circle. Angle NPQ = 121°. Find the size of angle NOP.
21. WVX is a tangent to the circle. O is the centre of the circle. Angle TVW = 48° and Angle UTO = Angle OVU. Find the size of angle UVX.

22. ABCD is a cyclic quadrilateral. Find the size of angle ABC.
23. FG is a tangent to the circle. M is the centre of the circle. E and F lie on the circumference of the circle. Angle MGF = 41°.

Find the size of angle MEF.

24. TSU is a tangent to the circle. PQRS is a cyclic quadrilateral. Angle RSU = 46° and QR = RS.

Find the size of angle QPS.
25.
Picture below are two circles – Circle 1 and Circle 2.
O is the centre of Circle 1.
Two tangents to Circle 1 touch the circumference at points J and K.
T is the point where the two tangents meet.
RS is a tangent to Circle 2.

Find x and y.